



**IN THE
UNITED STATES
PATENT AND TRADEMARK OFFICE**

IN RE APPLICATION OF: Weiss, et al.
CASE: OST-041076
SERIAL NO.: 10/708,183
FILED ON: February 13, 2004
FOR: OPTICAL SYSTEM

**STATEMENT OF
BASIS FOR
RELEVANCE OF
FOREIGN
LANGUAGE
DOCUMENTS
IDENTIFIED IN
SUBMITTED
SUPPLEMENTAL
INFORMATION
DISCLOSURE
STATEMENT**

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

**ATTENTION OF:

EXAMINER:**

Dear Sir:

If any charges or fees must be paid in connection with the following communication, they may be paid out of our Deposit Account No. 50-0545.

<u>Publication Number</u>	<u>Publication Date</u>	<u>Basis for Relevance</u>
JP 9-082599	March 28, 1997	<p>To correct non-linear magnification errors or the image formation characteristics, such as image plane curvature, of a projection optical system, degraded due to variations in the ambience, such as atmospheric pressure, or the absorption of the light from lighting for exposure.</p> <p>The lens elements of a projection optical system are composed of lens elements, made of quartz and lens elements made of fluorite, and the temperature of the lens elements is controlled by means of a temperature controller to correct image formation characteristics. Temperature sensors are fit onto the ends of the lens elements and temperatures measured by means of the temperature sensor are fed to a main controller. When the measured temperature reaches a specified target value, the main controller starts the operation of the exposure of a wafer.</p>

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To conduct correction with high accuracy by obtaining the change of the imaging characteristics of a projection optical system due to an external temperature by the formula of heat transfer and correcting imaging characteristics. The temperature of the holding member of a projection optical system is measured by temperature sensors, and a temperature in the projection optical system is acquired by using operation formula, in which the heat transfer characteristics of the projection optical system are considered, on the basis of outputs from the temperature sensors, and corrected. Incident energy is obtained by a photoelectric sensor, etc. To a temperature change due to the absorption of the illuminating light of the projection optical system, the storage of energy to the projection optical system is arithmetically operated, and the alteration of imaging characteristics is acquired and imaging characteristics are corrected, but the temperature change of a lens element due to the temperature change of the lens tube of the projection optical system and the temperature change of the lens element due to the absorption of illuminating light are separated and treated by also arithmetically operating energy storage in consideration of the heat transfer characteristics of the projection optical system, and the application of dual control is prevented. Accordingly, the variation of imaging characteristics based on a temperature change in a chamber and the alteration of imaging characteristics due to the absorption of illuminating light can be corrected with excellent accuracy.

Should anything further be required, a telephone call to the undersigned at (312) 226-1818 is respectfully invited.

Respectfully submitted,

Dated: July 13, 2004



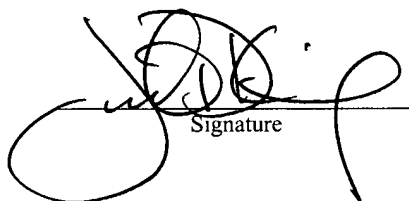
Jacob D. Koering
One of Attorneys for Applicant

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Patent Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on July 13, 2004

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